

AMENDMENTS TO THE CLAIMS

1-14 (Cancelled)

15. (Currently Amended) A multi-service monitoring system comprising:

computer server systems having a cluster of application servers communicatively coupled on a computer network to serve software applications over the computer network to a plurality of computer client systems, ~~each of the application servers comprising server nodes~~, wherein each computer server system including an application server having:

an administration service to generate runtime management beans ("MBeans"),
wherein each runtime MBean is associated with a server node and one or more resources associated with the server nodes such that each runtime MBean serves as an intermediary between its one or more associated resources and a corresponding monitor MBean of monitor MBeans that seeks monitoring data relating to the one or more resources, each runtime MBean collecting monitoring data ~~for its relating to the~~ one or more associated resources and reporting the monitoring data to ~~a the~~ corresponding monitor MBean; and

a monitor service in communication with the administration service, the monitor service to generate the monitor MBeans, each monitor MBean being directly mapped to a corresponding runtime MBean and indirectly mapped to a resource associated with the corresponding runtime MBean, and each monitor MBean having a resource identifier to identify its corresponding runtime MBean.

16. (Previously Presented) The system as in claim 15 wherein each computer server system including an application server further having:
- a notification service to generate notifications in response to occurrence of one or more specified events relating to one or more runtime MBeans or one or more monitor MBeans, the notification service providing the notifications to each application server in the cluster of application servers.
17. (Cancelled)
18. (Currently Amended) The system as in claim 15 wherein each computer server system including an application server further having:
- a graphical user interface to hierarchically display the monitoring data associated with resources associated with ~~the~~ server nodes based on a hierarchical arrangement of the server nodes in a hierarchical tree structure.
19. (Cancelled)
20. (Previously Presented) The system as in claim 15 wherein the runtime MBeans include standard runtime MBeans and specific runtime MBeans, the standard runtime MBeans providing one or more predefined standard functions for their associated resources, and the specific MBeans providing one or more resource-specific functions for their associated resources.
21. (Previously Presented) The system as in claim 20 wherein one of the standard functions comprises starting and stopping of a resource.

Claims 22-24 (Cancelled)

25. (Previously Presented) The system as in claim 15 wherein one of the specified events comprises a resource reaching a first threshold value indicating the resource is available.
26. (Previously Presented) The system as in claim 25 wherein one of the specified events comprises the resource reaching a second threshold value representing a critical resource value indicating the resource is not available.

Claims 27-29 (Cancelled)

30. (Currently Amended) A method comprising:
- communicatively coupling a cluster of application servers on a network to serve software applications over the network to a plurality of clients; ~~each of the application servers comprising server nodes;~~
- generating runtime management beans ("MBeans"), wherein each runtime MBean is associated with a server node and one or more resources associated with the server node such that each runtime MBean serves as an intermediary between its one or more associated resources and a corresponding monitor MBean of monitor MBeans that seeks monitoring data relating to the one or more resources, each runtime MBean collecting monitoring data ~~for its relating to the~~ one or more associated resources and reporting the monitoring data to ~~a the~~ corresponding monitor MBean; and
- generating the monitor MBeans, each monitor MBean being directly mapped to a corresponding runtime MBean and indirectly mapped to a resource associated with the corresponding runtime MBean, and each monitor

MBean having a resource identifier to identify its corresponding runtime MBean.

31. (Previously Presented) The method as in claim 30 further comprising:
generating notifications in response to occurrence of one or more specified
events relating to one or more runtime MBeans or one or more monitor
MBeans, the notification service providing the notifications to each
application server of the cluster of application servers.
32. (Cancelled)
33. (Currently Amended) The method as in claim 30 further comprising:
hierarchically displaying, via a graphical user interface, the monitoring data
associated with resources associated with ~~the~~ server nodes based on a
hierarchical arrangement of the server nodes in a hierarchical tree
structure.
34. (Cancelled)
35. (Previously Presented) The method as in claim 30 wherein the runtime MBeans
include standard runtime MBeans and specific runtime MBeans, the standard
runtime MBeans providing one or more predefined standard functions for their
associated resources, and the specific MBeans providing one or more resource-
specific functions for their associated resources.
36. (Currently Amended) A tangible machine-readable storage medium comprising
instructions which, when executed, cause a machine to:
communicatively couple a cluster of application servers on a network to serve
software applications over the network to a plurality of clients, each of

the application servers comprising server nodes;
generate runtime management beans ("MBeans"), wherein each runtime MBean
is associated with a server node and one or more resources associated
with the server node such that each runtime MBean serves as an
intermediary between its one or more associated resources and a
corresponding monitor MBean of monitor MBeans that seeks monitoring
data relating to the one or more resources, each runtime MBean
collecting monitoring data ~~for its relating to the~~ one or more associated
resources and reporting the monitoring data to ~~a the~~ corresponding
monitor MBean; and
generate the monitor MBeans, each monitor MBean being directly mapped to a
corresponding runtime MBean and indirectly mapped to a resource
associated with the corresponding runtime MBean, and each monitor
MBean having a resource identifier to identify its corresponding runtime
MBean.

37. (Previously Presented) The tangible machine-readable storage medium as in
claim 36 wherein the instructions which, when executed, further cause the
machine to:

generate notifications in response to occurrence of one or more specified events
relating to one or more runtime MBeans or one or more monitor
MBeans, the notification service providing the notifications to each
application server of the cluster of application servers.

38. (Cancelled)

39. (Currently Amended) The tangible machine-readable storage medium as in claim 36 wherein the instructions which, when executed, further cause the machine to:
- hierarchically display, via a graphical user interface, the monitoring data associated with resources associated with the server nodes based on a hierarchical arrangement of the server nodes in a hierarchical tree structure.
40. (Cancelled)
41. (Previously Presented) The tangible machine-readable storage medium as in claim 36 wherein the runtime MBeans include standard runtime MBeans and specific runtime MBeans, the standard runtime MBeans providing one or more predefined standard functions for their associated resources, and the specific MBeans providing one or more resource-specific functions for their associated resources.
42. (Previously Presented) The system as in claim 15, wherein the runtime MBeans, at an instrumentation level, to passively report the monitoring data to the monitor MBeans, at an agent level, according to a predetermined schedule.
43. (Previously Presented) The system as in claim 42, wherein the runtime MBeans to actively report the monitoring data to the monitor MBeans at an occurrence of an event or in response to a request from a monitor MBean.
44. (Previously Presented) The method as in claim 30, further comprising passively reporting the monitoring data from the runtime MBeans, at an instrumentation

- level, to the monitor MBeans, at an agent level, according to a predetermined schedule.
45. (Previously Presented) The method as in claim 44, further comprising actively reporting the monitoring data from the runtime MBeans to the monitor MBeans at an occurrence of an event or in response to a request from a monitor MBean.
46. (Previously Presented) The tangible machine-readable storage medium as in claim 36, wherein the instructions which, when executed, further cause the machine to passively report the monitoring data from the runtime MBeans, at an instrumentation level, to the monitor MBeans, at an agent level, according to a predetermined schedule.
47. (Previously Presented) The tangible machine-readable storage medium as in claim 46, wherein the instructions which, when executed, further cause the machine to actively report the monitoring data from the runtime MBeans to the monitor MBeans at an occurrence of an event or in response to a request from a monitor MBean.
48. (New) The system as in claim 15, wherein the one or more resources comprise one or more system resources including one or more of kernel resources, application components, and libraries.
49. (New) The method as in claim 30, wherein the one or more resources comprise one or more system resources including one or more of kernel resources, application components, and libraries.

50. (New) The tangible machine-readable storage medium as in claim 36, wherein the one or more resources comprise one or more system resources including one or more of kernel resources, application components, and libraries.